

peated hemorrhages for the past ten years. She had been on the Lenhardt treatment and her history had been published as one of the successful cases treated by the Lenhardt method. Three or four months ago she again had a hemorrhage and the symptoms were typical of gastric ulcer; we advised operation. A small thickening in the fundus of the stomach was found; all the glands along the curvature were enlarged and there were some adhesions. However, the mucosa was not thickened. The Finney operation was performed and the symptoms disappeared. Such cases show that we should be more careful in our diagnosis of gastric ulcer, and I think that it should only be diagnosed when the symptoms are absolutely classical. Besides hemorrhage there should be a distinct history of pain with distinct relation to food and position of the patient. I have found it to be one of the most reliable signs of ulceration if turning a patient to the opposite side the pain diminished almost immediately. Most patients can sleep on the left side when they cannot lie on the right side at all.

Dr. E. Rixford: Dr. Brown said that gastric hemorrhage in connection with appendicitis is not an unusual occurrence, but it seems to me, judging from a considerable experience, that it is very rare. I have yet to find in my own practice a single case in which there has been anything at all comparable to gastric hemorrhage in connection with appendicitis. Of course, since Moynihan's article and the work of Mayo and a good many other abdominal surgeons, the evidence of pyloric spasm as indicating something wrong lower down in the bowel has become rather full, and we are inclined to look upon it as a physiological protective process. That such a spasm may be sufficiently vigorous to cause bleeding from the mucous membrane is perfectly possible and probably there is something more to it than that. There has recently been some work done with regard to congestion of the base of the right lung as an early symptom in appendicitis. One of our own students here recently had a gangrenous appendix and when examined by the clinicians it was a question whether his trouble were not really a beginning basal pneumonia of the right lung. There was distinct evidence of congestion which all cleared up after the removal of the gangrenous appendix. I have had one case in my experience which might be mentioned in connection with this, though perhaps the connection is rather remote. The patient was brought to the hospital suffering from symptoms of renal or ureteral calculus; there was hematuria and localized pain, with very little, if any, muscular spasm on the right side of the abdomen. The diagnosis of renal calculus seemed justifiable. Examination and washing out of the bladder by a prominent specialist failed to find any calculus. His opinion was that the bleeding was due to a calculus in the ureter, probably located at a point where the pain occurred. Incision over this region by myself showed a very much inflamed appendix, not lying very far from, though not adherent to the ureter. Removal of the appendix was followed by a complete subsidence of the hematuria. Whether these phenomena of congestion have any relation with the phenomenon of bleeding I am not prepared to state. The thing is certainly suggestive.

Dr. W. E. Garrey: We know the effect of absorption of toxins on the condition of the cells of the kidney and the appearance of blood in the urine; it might be well, in the cases of the type under discussion, to have a histological examination made of the mucosa of the stomach to determine whether or not there is any pathologic change in the secreting cells of this organ. In connection with the recent work done on internal secretions, substances have been found along the whole alimentary tract which have an effect upon the whole metabolism of the body. I recently saw some of the results of work done by Lewis and Mathews on the duodenum, showing that death resulted from removal of certain parts of this structure, but had no relation whatever to the surgical operation itself other than the re-

moval of the secretions. The death took place seven days after the operation with definite toxic symptoms which these workers attributed to the removal of a necessary internal secretion. A considerable question has been raised as to the possibility of the appendix having such an internal secretion. We know there are substances which are secreted in the upper portion of the alimentary tube not found in the lower part, and vice versa—a consideration which we ought to bear in mind as possibly related to the conditions reported by Dr. Levison. Other facts have been brought out by Moynihan's observations on the movements of the stomach, which are the first clinical corroboration of Cannon's experimental work, in which he shows that the peristaltic movements of the stomach begin toward the antrum and continue through the pylorus. The antrum is the most motile part of the stomach and this is the only clinical report of this fact I have seen.

### A METHOD FOR THE DETERMINATION OF THE PUS IN DISEASES OF THE ACCESSORY CAVITIES OF THE NOSE.\*

By HENRY HORN, M. D., San Francisco.

When a patient comes to us with a fever, an acute frontal headache, a forehead which is exquisitely tender to pressure and an examination of the nose reveals thick yellow pus in the region of the middle turbinate, we can say with a fair degree of certainty that we are dealing with an acute inflammation of the ethmoid cells and the frontal sinus.

When we have a patient who complains of a purulent discharge from one side of the nose, transillumination of that side gives a black shadow and the other side is perfectly clear, and an examination of the nose shows pus coming down over the middle of the inferior turbinate, we can also with a fair degree of certainty diagnose an empyema of the antrum of Highmore on that side.

Suppose, however, we have a patient who complains of a chronic nasal and pharyngeal catarrh, indefinitely located headaches, dyspepsia, and a general run-down condition, and we can discover no tenderness over the frontal region. We examine the nose and note nothing of any importance. Perhaps a few crusts, a little atrophic condition of the mucus membrane, but no pus, and no swelling or discharge of any kind.

Less than five years ago a diagnosis of chronic catarrh would have been made, and the patient would have been sent away with a prescription for a nasal spray. Perhaps we might have had our doubts as to the accuracy of our diagnosis, but repeated examinations would have only revealed exactly the same conditions. We would, in other words, have reached the limits of our resources. Today we are in an entirely different position, and the help has come to us largely through the use of negative pressure or suction.

An ocular demonstration is what we have when we make a successful diagnosis by means of suction. We not only see the pus ourselves, but can show it to the bystander. Many a "doubting Thomas" have I brought to the operating table, when I could demonstrate to his own sense of smell the foulness of the pus sucked from his own nose.

The method of diagnosis which I will show to

\* Read at the Fortieth Annual Meeting of the State Society, Sacramento, April, 1910.

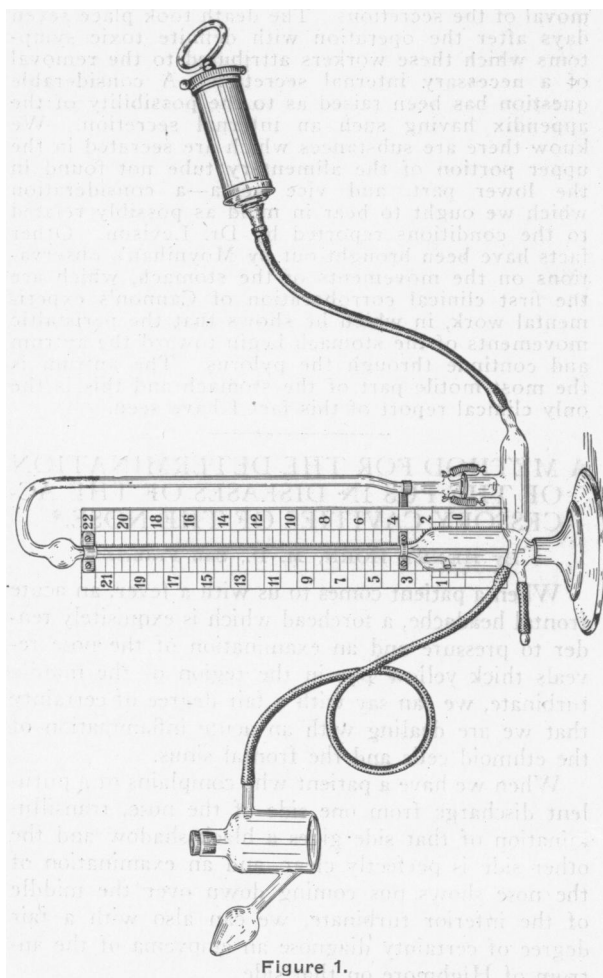


Figure 1.

you, and all the apparatus, is the result of my experiments while working as an assistant under Geheimrat Walb of Bonn, Germany. The facts which I will relate to you have been proved over and over again by myself and other investigators.

The historical development of the subject of the diagnosis of nasal accessory cavity disease, by means of negative pressure, would not interest you. The name of Sondermann is no doubt familiar to all. His first important article was published no longer ago than 1905. He invented an airtight rubber mask which fitted over the mouth and nose, and by means of a pear-shaped rubber ball, negative pressure was brought about. He was seeking a cure for ozena, a thing which has not yet been found. In his various later publications he called attention to the value of the method in the diagnosis of all forms of accessory cavity disease.

The whole matter was, however, in an unsatisfactory state. The Sondermann mask was dirty, impossible of proper sterilization, and sucked from both nostrils at once. The strength of the ball varied with its age, maker, condition of the rubber and many other factors. In a large proportion of the patients the machine would not work, and with a man wearing a beard or mustache it was unavailable. There was no way to determine how much strength one was using or how much was necessary.

The disadvantages of the various nose pieces then in use and the fact that no way had been sug-

gested of measuring the dosage, led me to the development of the present system, and after three years of experimental work covering thousands of experiments in every variety of accessory cavity disease, both acute and chronic, Walb and myself published an article<sup>1</sup> in which we were able for the first time to show:

1. A mercury manometer by which the dosage could be measured.
2. A nose piece which overcame all the objections existing in the other forms.
3. A metal pump, whose force remained forever constant and enabled us to carry out the procedure every time in every case.

The manometer (Fig. 1) is mounted on a heavy foot, and carries a metal scale divided into centimeters. The mercury is held in a chamber so constructed as to eliminate the possibility of the mercury being blown or spilled, no matter in what position the apparatus is carried. On the right is a small protection chamber connected with the machine by means of a movable, ground glass joint. This chamber protects the apparatus from any sudden movement of the patient and catches all moisture which collects in the tubes or pump.

The nose piece (Fig. 2) is made of glass, easily sterilized and can be corked and put away for an examination of its contents. The olive tip fits any nose, and the little projection on the outlet prevents any secretion from entering into the rubber tube.

The pump which I use is the ordinary, medium sized Bier's suction pump. Previous to the publication of our article, there were nothing but rubber balls spoken of in the publications concerning these cases. Their disadvantages were numerous. In a series of experiments in which I compared the various makes on the market to the metal pump, I found without exception that the balls varied in strength, with their age, amount of use and place of manufacture. The greatest objection, however, to the rubber balls was, that after obtaining a temporary suction, by squeezing the air out, the ball must be released, and in that instant the soft palate drops back and the negative pressure is again lost. With the metal pump on the other hand, because the amount of power far exceeds anything we can use, and the recovery of the piston is so rapid, after once bringing the soft palate up by phonation, swallowing or any other method that is chosen, we have so much reserve force left in the syringe that the palate can not drop back. In this way we are able to carry out the procedure every time with a new patient, whereas with the old method we had over 50 per cent of failures at the first attempt.

The method of using the apparatus is extremely simple. In order to get a good result, however, one thing is absolutely necessary. It is very difficult to remember, after looking into a nose, the exact location of every crust, drop of pus and bit of secretion. Over and over again one will suck secretion from an accessory cavity and then declare that it was already present in the nose. A preliminary douching of the nose with a quart of salt solution is of the greatest importance. Even after this douching the nose must be examined, and every particle of mois-

ture or secretion wiped away. If, in an acute case, there is any doubt as to the patulousness of the ducts, a preliminary cocanization is of great importance.

The nose now being clear of visible secretion, we instruct the patient to hold the olive tip in the side

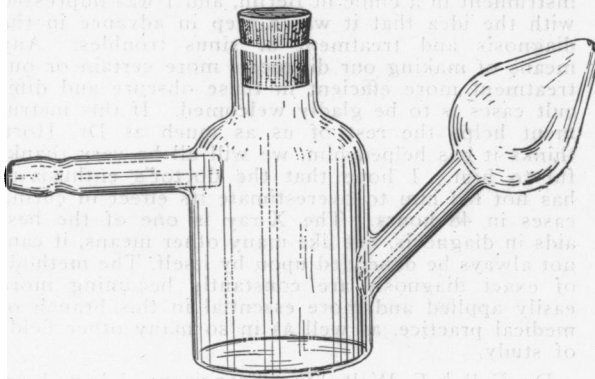


Figure 2.

to be examined and to close the other nostril with the finger. (Fig. 3). Care must be taken that the tip does not come in contact with the side of the nose or the septum. If this is the case, then the manometer will immediately show a high reading, there will be no subjective symptoms on the part of the patient, and if the finger which is holding the nostril closed is loosened, the pressure will remain high as before. (Fig. 3) The patient must be told to sing a loud and high e-e-e-e-e, which has the tendency to throw the soft palate against the posterior wall and make the naso-pharyngeal cavity a closed space. At the same time the pump must be quickly brought into use, but the height at first must not exceed 7-8 cm. The nose is then examined, and if no secretion is seen, the procedure is repeated with an increase up to 10 to 15 cm. and carried out for 15 to 30 seconds. This procedure is repeated if necessary up to 20 cm., or until one is convinced that no secretion comes from the region of the anterior end of the middle turbinate.

If now the sphenoid cavity is suspected, and the experiment gave no results with the patient's head held upright, we must bend the head far over toward the breast and repeat the manipulation. If now we find secretion coming between the middle turbinate and septum, we can be fairly certain that we have to do with an isolated empyema of the sphenoid cavity.

If the antrum of Highmore is alone suspected, then the head must be bent far over toward the sound side. Here particular attention must be paid to secretion appearing far back at the posterior end of the inferior turbinate. I have had several cases where the secretion showed only in this one place, and without a very careful examination with a brilliant illumination it was apt to be overlooked.

So far we have only spoken of the method in connection with diagnosis. In the treatment of acute cases of empyema of the frontal sinus and the ethmoid cells, it is of great benefit. Here one must be careful not to use a pressure higher than 7 to 8 cm.

This suction carried out twice a day in combination with application of moist heat has completely cured several cases within 48 hours. The relief from pain is sometimes instantaneous and the patient always feels better after the first treatment.

Its use in chronic cases can briefly be summed up as follows: By means of the suction treatment you remove more secretion in the few minutes that the treatment is being carried out, than can be drained away by natural means in twenty-four hours. I have never cured a chronic case of frontal sinus trouble where the mucus membrane was thickened and polypose, and never expect to by strictly conservative measures. However, if free drainage helps in the recovery of these troubles, then suction must be a large factor in the betterment.

The method of suction finds its greatest use in the after treatment of operated accessory cavity troubles. In a paper before the German Laryngological Society,<sup>2</sup> I reported 24 Killian operations. The time of healing was as follows:

6 cases were completely healed in 5 to 8 days.

11 cases were completely healed in 10 to 14 days.

3 cases were completely healed in 21 days.

4 cases were healed in a much longer period.

Time does not allow an analysis of these cases. It is sufficient to say that all the delayed cases were complicated with ozena, and the condition of the mucus membrane had much to do with the apparent delay. The reader can refer to the original works for more detailed information.<sup>3</sup> It must be apparent to all that by this method a new factor has entered into the after treatment of this class of cases. By means of suction a perfect drainage is carried out from the time of the removal of the gauze drains up to the time that the case is healed. It has a tendency to prevent the formation of granulations around the drainage openings into the nose, and therefore the closing of these openings takes place much more slowly.

Two points were brought out during the course of my early experiments which are of great importance. I was able to show experimentally that too great a pressure in acute cases may cause a bleeding from the mucous membrane of the sinus itself. A case of acute empyema of the frontal sinus was treated with 7 cm. pressure, until the cavity was thoroughly evacuated of its contents. A pressure of 18 cm. was used for a period of about a minute. The next day a pressure of 7 cm. sucked from the frontal sinus a clot of blood which approximated the shape of the sinus. The bleeding could only have come from the mucous membrane lining the sinus, because the nose was first cleansed with a preliminary douche and then carefully examined.

The second point, concerning the importance of which I am yet in doubt, is as follows: I have found what might be called a pathological index for the nose of every patient. That is, at a certain height of pressure we obtain bleeding from the mucus membrane of the nose. This height varies in different individuals and in different classes of nose diseases. As yet I have been unable to formulate any law to cover the matter, but think it shows that in using negative pressure we must have some sort of an apparatus to measure the pressure with.

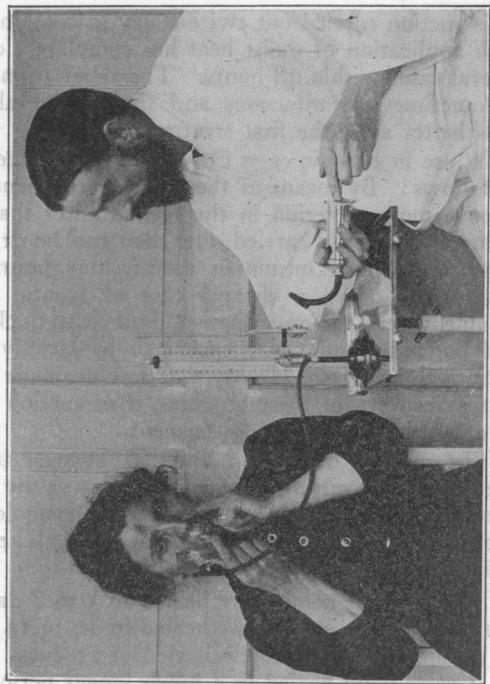


Figure 3. Ueber Saugbehandlung bei

To recapitulate:

1. By means of this method we are in a position to make a more exact differential diagnosis than was formerly possible.
2. The suction treatment gives a positive result in the treatment of acute cases and in chronic cases assists nature in the reparative work.
3. To carry out a suction treatment in a proper manner it is necessary to have some sort of a manometer for measuring the amount of pressure and the dosage.
4. A constant pressure is only possible with a metal pump or a water pump.
5. Too great pressure is dangerous in acute cases.
6. By the use of suction, the after treatment of the Killian operation and other operations on the accessory sinuses can be considerably shortened.

#### LITERATURE.

1. Walb und Horn: Ueber Saugbehandlung bei Erkrankungen der Nebenhöhlen der Nase. Zeit. für Ohrenheilkunde, Band 42, Page 23.
2. Horn: Die Behandlung operierter Nebenhöhlen. "Verhandlung des Vereins deutscher Laryngologen. 1909.
3. Horn: Annals of Otology, St. Louis, March, 1910.

#### Discussion.

Dr. Kaspar Pischel, San Francisco: Since Dr. Horn mentioned that I would speak of the value of X-ray pictures, I will say that I do consider the X-rays a valuable diagnostic help. I do not think that we should rely on the X-rays entirely, for it is a bad practice on any one symptom or any one aid. We should make use of every means for diagnosis. It is not true that X-ray pictures are for the rich alone; the X-ray man who does my work will, with great pleasure, take pictures for those not able to pay. Every one of you, I am sure, can have an X-ray picture taken for the poorest patient. I think this apparatus of Dr. Horn's is a most excellent one which he has worked out very carefully. I find my method of simply using a syringe directly on the nose a very crude one. Dr. Horn did not mention that we can pump the pus from the antrum by turn-

ing the patient over to the other side. As I had at times difficulty in exactly locating the point where the pus came down from the frontal sinus, I had an instrument constructed on the principle of Siegel's Otoscope, which enables me to look into the nose while the pump is applied.

Dr. William Ellery Briggs, Sacramento: I have been very much interested in this demonstration. Last summer I had the pleasure of seeing Dr. Horn's instrument in a clinic in Berlin, and I was impressed with the idea that it was a step in advance in the diagnosis and treatment of sinus troubles. Any means of making our diagnosis more certain or our treatment more efficient in these obscure and difficult cases is to be gladly welcomed. If this instrument helps the rest of us as much as Dr. Horn thinks it has helped him, we will all be very thankful to him. I hope that the doctor's enthusiasm has not led him to overestimate its effect in curing cases in 48 hours. The X-ray is one of the best aids in diagnosis, but like many other means, it cannot always be depended upon by itself. The methods of exact diagnosis are constantly becoming more easily applied and more essential in this branch of medical practice, as well as in so many other fields of study.

Dr. Cullen F. Welty, San Francisco: I have been very much interested in what Dr. Horn has to say; however, I will have to make a protest. In the large majority of cases pus can be demonstrated in the middle meatus or the olfactory fissure by simple cocanization and waiting 15 minutes. All that this suction apparatus can do in the diagnosis of affections of the accessory cavities is to find pus following suction in one of the aforesaid places. When pus has been demonstrated beyond a question of doubt, you are practically in the same situation that you were from the ordinary examination, and if I am not mistaken will often overlook an affection of the Antrum of Hymore, because of the position opening. I am almost confident that the probe puncture will give much more reliable information. The illumination test gives you accurate results in perhaps 80%. The suction apparatus, I am confident, will not equal the latter, while the probe puncture gives you absolutely accurate findings in 100%. If the Antrum of Hymore can be excluded, it is indeed difficult to determine whether the pus is from the frontal sinus or from the anterior ethmoidal cells—in fact, they are more often associated than otherwise. Again you will have to resort to washings, introduction of sounds, and more particularly, I think, to the X-ray picture. The same position holds for the sphenoid sinus and the posterior ethmoidal cells. To illustrate the point in question, I recently did a Denker operation on the Antrum of Hymore,—was full of polyps and very offensive pus. In time the antrum was entirely healed, but pus continued to appear in the middle meatus. I found by more thorough examination that the anterior ethmoid cells were diseased. This has happened numberless times to world-famous operators. I go into detail to accentuate the importance of a most thorough examination, and when we need it most, this suction apparatus will be sure to fail. Up to the present time, surgeons could not speak with assurity as to the ultimate outcome of a radical sinus operation. Dr. Horn reports quite a few cases that he treated by this instrument following operation; if these observations are correct he has indeed put an instrument at our disposal that will cure all the cases,—this will result in one of the greatest achievements that has been made in nasal surgery since the advent of the Killian operation. While I do not like to question the results, I am very anxious to try this apparatus on some operated cases.

Dr. G. P. Wintermute, Oakland: I would like to ask Dr. Horn if he depends entirely upon this instrument in cases where there is very little pus, or in cases where pus is not visible, and also in his antrum cases. Can it suck the pus from the floor

of the antrum, or does he place the head in a certain way in order to get the pus out?

Dr. J. Dennis Arnold, San Francisco: I quite agree with most of the remarks which the speaker has made, and we should be the last ones to minimize the advantages of any instrument that increases our diagnostic resources. Dr. Horn has evidently devised an instrument simple in principle and of a considerable degree of efficiency. I am sure that it will be very helpful, but it cannot be relied upon alone. Richard Thomas, of Baltimore, deserves the credit of originality in this matter. His instrument had an olive-shaped nostril stop and a strong metallic pump. I saw it first in a case of Dr. Thomas' and afterwards used it on two cases of my own. One patient suffered so much pain from its application that he refused to permit me to use it a second time. Dr. Thomas told me that in three cases he thought he had ruptured the ear drum. The instrument is a good one as it stands, because with the manometer attachment one can obviate the danger of using too much force. In the diagnosis of antrae disease, the instrument is hardly needed, its chief sphere of usefulness will be in empyema of the frontal and ethmoid sinuses. I am personally of the opinion that in the vast majority of the cases of infection of the frontal sinus, the ethmoid and sphenoidal cells are also affected. In so far as the value of this instrument is concerned in regard to after treatment of Killian operation, I have had no experience.

Dr. Henry Horn, San Francisco: That the X-ray is a help in the diagnosis of these conditions, we will gladly admit, and as Dr. Pischel has said, it is a help to be used in combination with every other known clinical method. Negative pressure has the same function; it is an aid to diagnosis, and nothing more is claimed for it in this connection. The value of certain positions of the head to cause the pus to flow more freely has been worked out many years ago by Sondermann, and is a method which would naturally occur to any one. Dr. Pischel's method I tried and was obliged to give up. Of course the most exact method of locating pus in the antrum is to puncture it and wash it out. I repeat, a very necessary preliminary procedure in making a diagnosis by means of suction, is a thorough douching of the nose, so that no secretion of any kind remains behind to complicate the field. A gentle suction will bring to light a single drop of pus, and then it depends on the clinical experience of the man himself to locate it.

### UNUSUAL MANIFESTATIONS OF DEFECTIVE FEET.\*

By JAMES T. WATKINS, M. D., San Francisco.

(1). Lately a young lady was referred to me by Dr. Krotoszyner. Another surgeon had removed her coccyx for a persistent "coccygodynia." Despite the removal of the coccyx, the symptoms persisted. A careful physical examination revealed nothing abnormal except pronated feet. These had never caused her discomfort. Despite mild protests from the patient, the static error was corrected by supplying specially constructed shoes and insoles. At once her symptoms, typical of coccygodynia, disappeared and have not returned.

(2). A young man was sent to me by Dr. Breyfogle because of pain at the inner sides of his knees made worse by walking. The patient prided himself upon his powers as a pedestrian. Examination showed knees which, except for some creaking during flexion, appeared to be normal. The feet were

massive but somewhat pronated. They had never occasioned discomfort. An insole different in type from that used with the first case was prescribed. Immediately the pains in the knees cleared up and the patient was enabled to resume his long tramps.

(3). A surgeon referred to me a lady whose symptoms had seemed to call for radical gynaecological operations. The operations had not brought relief, however, to the anticipated degree. In searching for further causes the surgeon noted that the patient had badly pronated and relaxed, flabby feet, a defect of which she was not aware. On his invitation, I prescribed massage, resistance exercises, and proper shoes. Under this treatment the patient's symptoms disappeared.

(4). A lady consulted me because of a backache from which she had suffered more or less persistently from her fifteenth year. Prior to that she had had, so she said, "hip disease," and had worn a brace of the Sayre type. A most careful physical examination revealed nothing abnormal. The feet were somewhat pronated but well arched. An opportunity to observe her gait at an unguarded moment was sought. It was then noted that the patient walked with her feet markedly abducted.

The leverage actions of the feet on the ankles were little used, the former being removed from the ground and advanced through an exaggerated flexion at the knee. No discomfort had been felt in either feet or legs, however. Massage, walking exercises, and shoes and insoles contrived to combat the tendency to pronation gave immediate relief. In this case it has been necessary to modify the insoles once or twice since.

(5). With Dr. Pettit I saw in consultation a young lady who, immediately upon arising from a protracted attack of typhoid fever, had suffered acutely from pain referred to the hip joint and to the outer side of the thigh. This had been regarded as a post typhoid neuritis. Ordinary distraction by weight and pulley had given temporary relief. Examination revealed nothing abnormal in hip or spine, though the X-ray seemed to show a short femoral neck. The ligaments of the knee joint were loose and permitted side to side motion. The foot itself was markedly pronated. A shoe was prescribed which would tend to throw the weight to the outer side of knee and foot. Relief was immediate and persisted.

(6). A colleague asked me to see with him a young man who had been suffering for some time with pain in the back and extending down the outer sides of the thighs. The condition had been said to be "osteo-arthritis" of the spine. Physical examination revealed a massive "short coupled" young man with broad, rather flat feet. The spine was rather inflexible; side bending seemed to be a shade less free on one side than on the other. But the man was a waiter by occupation, and it was deemed possible that this latter feature might be the result of some occupational distortion. Waiters are peculiarly liable to foot troubles, so it was thought expedient first to treat the more obvious defect. This was done by means of appropriate shoes and insoles, and thereupon the man's disabilities disappeared.

(7). Lately I saw a similar case, and very nearly

\* California Academy of Medicine, June, 1910, Meeting.